

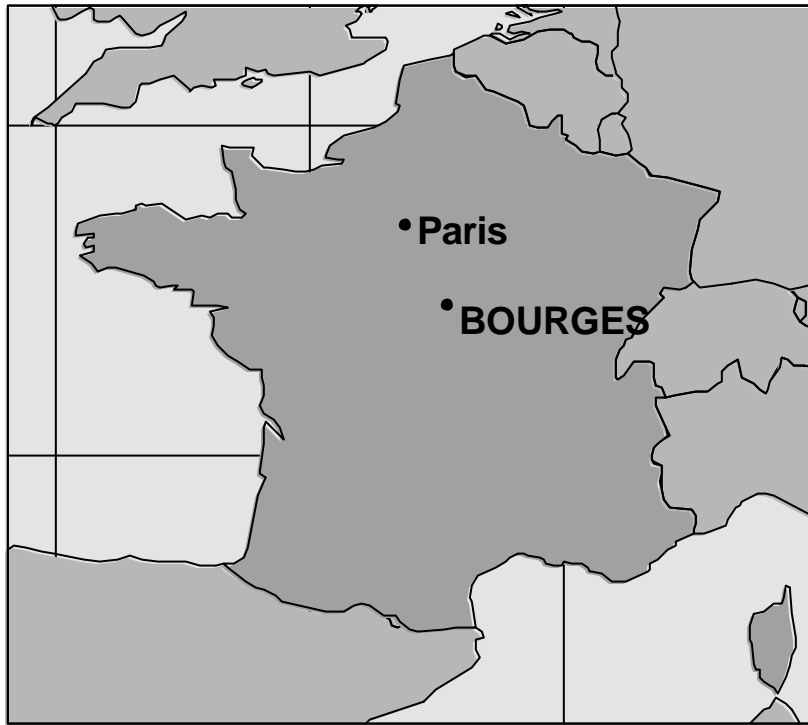


CTA INTERNATIONAL

Contents

- Technology
- Programme
- Integration Concepts
- Logistics
- Safety Testing
- Future Developments

CTA International



- CTAI is a joint venture company 50/50 BAE Systems and Giat Industries.
- Dedicated team, 33 strong, British and French engineers and scientists based in Bourges, France.
- Total company focused on development of 40mm Cased Telescoped Weapon System.
- Program funded from industrial investment.

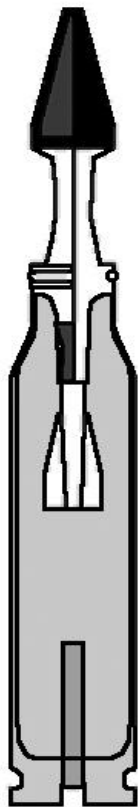
Investment since 1994 - >\$41M

Investment commitment - >\$9M

CTA INTERNATIONAL

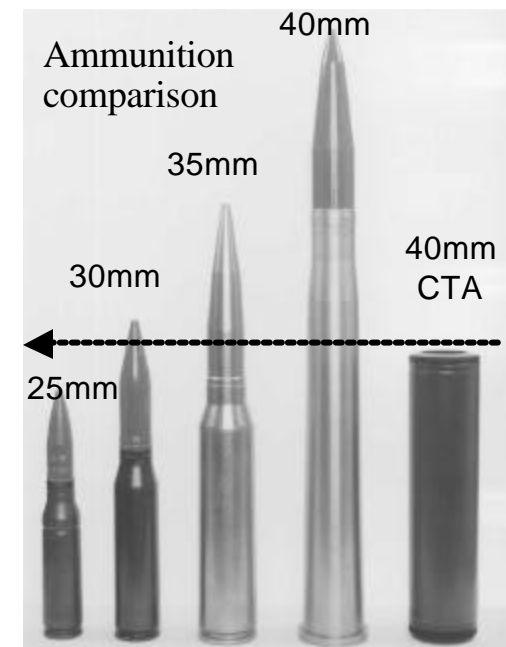
Cased Telescoped Technology

Principle of Technology 'Telescope' the ammunition



30% saving in volume for the same performance

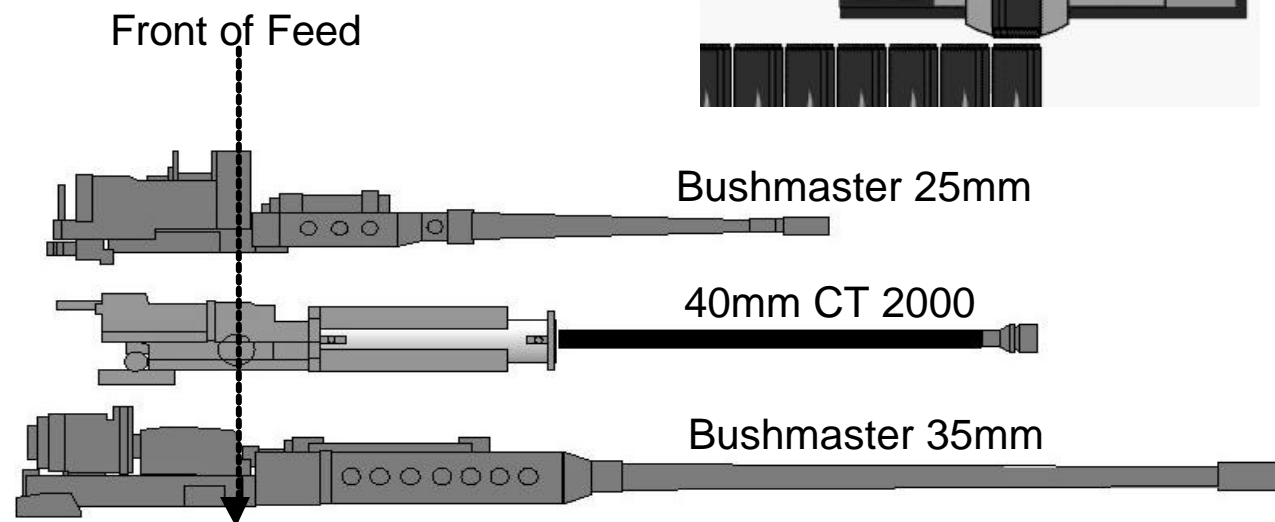
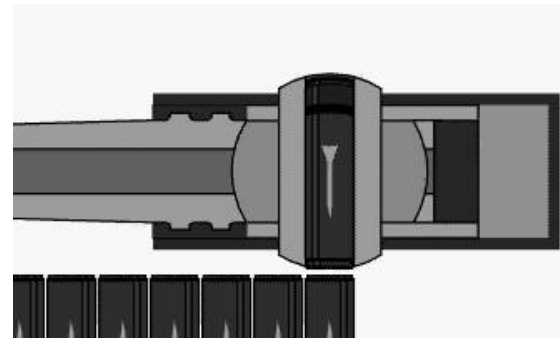
30% more performance for the same volume



Cased Telescoped Technology

**Cylindrical cartridges enable a much simpler Cannon mechanism
As a consequence the overall cannon system is substantially smaller**

Rotating chamber and 'push through' concept



CTWS Technology Phase



45 CT2000

Cylindrical cartridge
90° chamber rotation
Single-action feed
200 spm



35 CT2000 (demonstrator)

Shuttle-action chamber
2 position operation



12 7mm Composite demonstrator

Gatling principle
26kg, 4000 spm

Cased Telescoped Cannon Systems Demonstrated by 1996

12.7mm
25mm
35mm
45mm



45 M911

Cylindrical cartridge
28° chamber rotation
Single-action
feed 400 spm

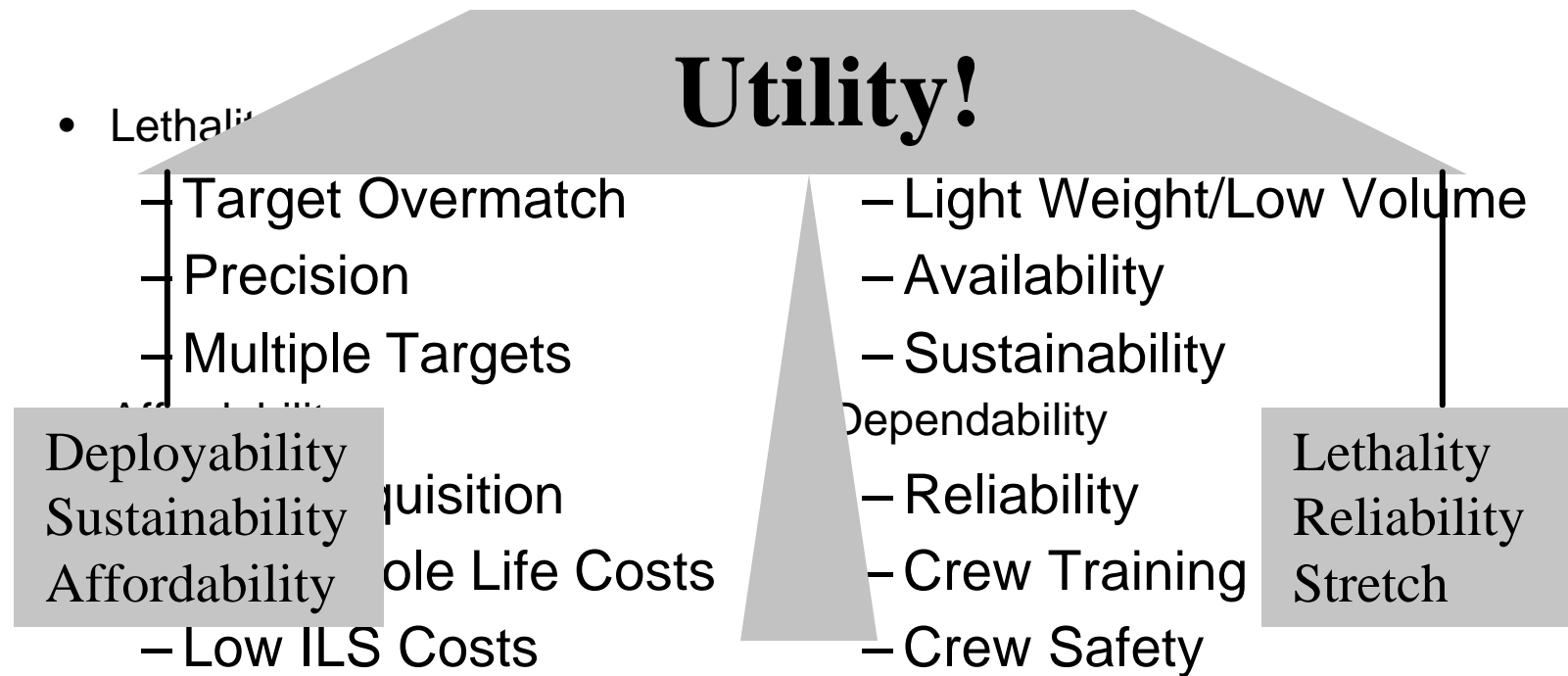


Open chamber weapon

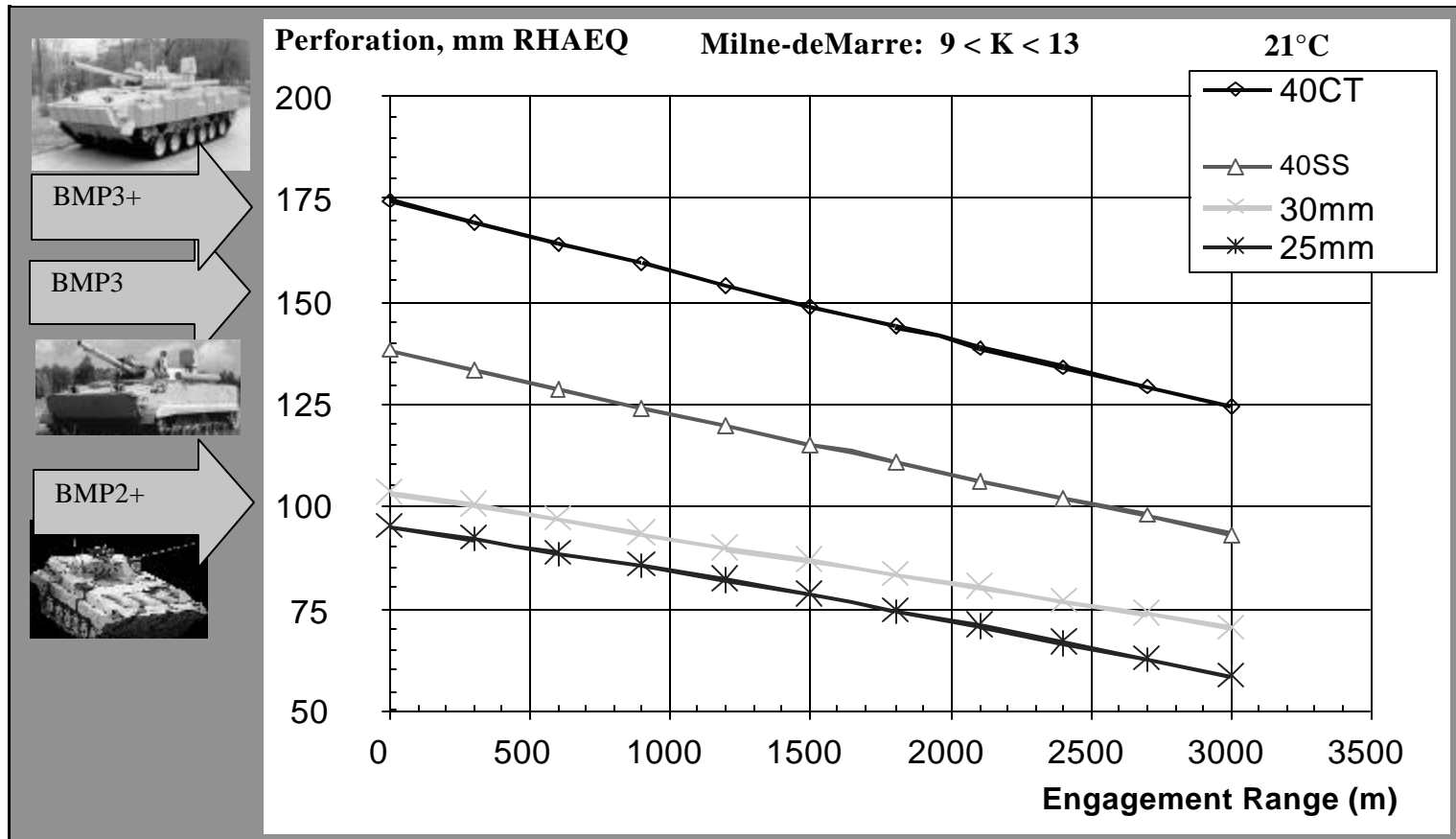
Square cartridge
Transverse feed
Very high rate of fire

CTA INTERNATIONAL

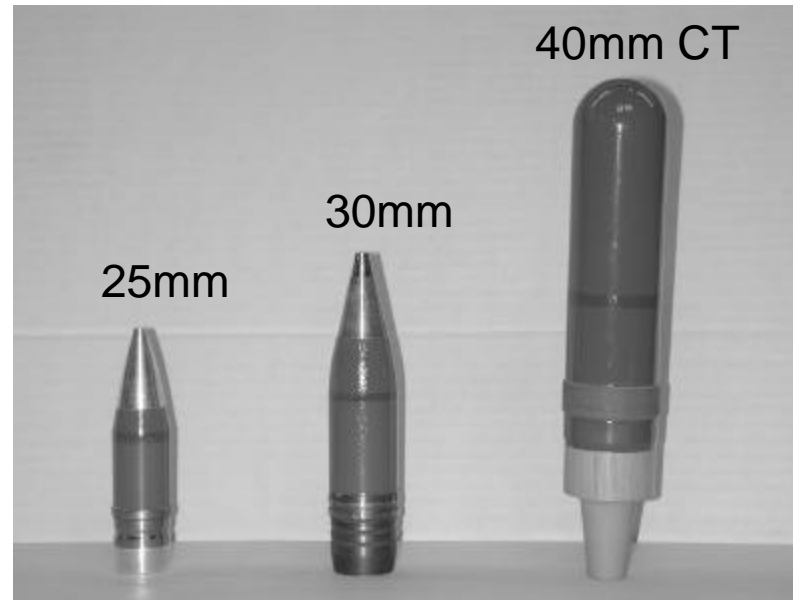
40mm CTWS



APFSDS Penetration

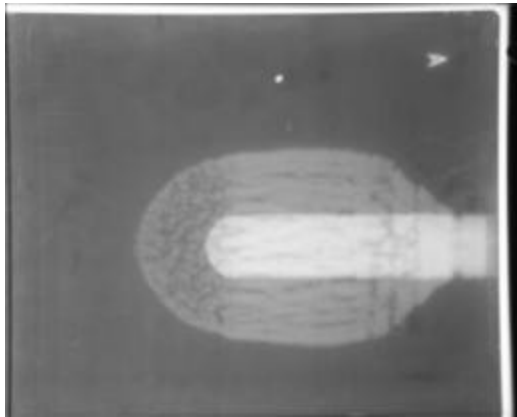


Comparison HE/GPR Rounds

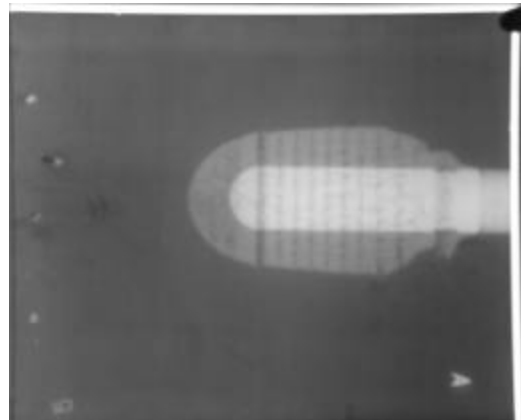


	Projectile Mass	Mass Steel	HE Mass	MAE m2	No Rnds (30mx30m SWIS)
25mm	185g	120g	24g	15m2	45
30mm	360g	240g	34g	28m2	20
40mm CT	1000g	750g	120g	90m2	6

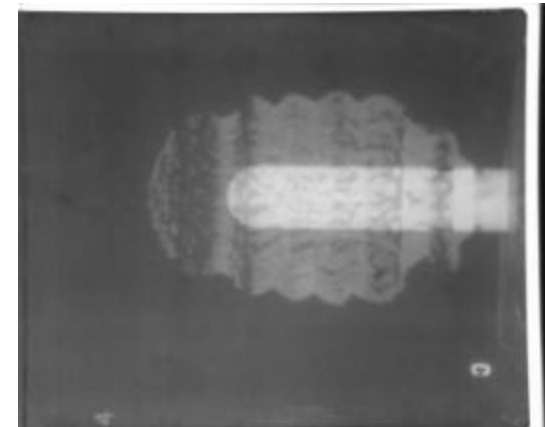
Air Burst Fragmentation Trials



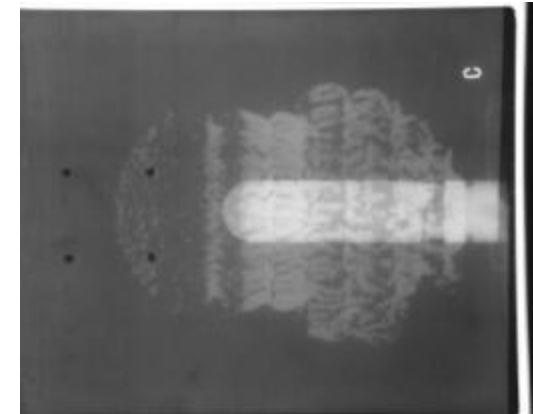
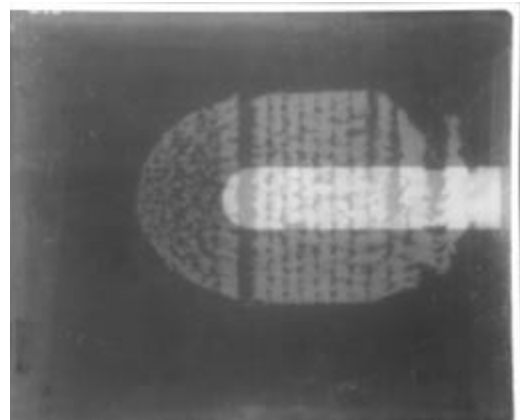
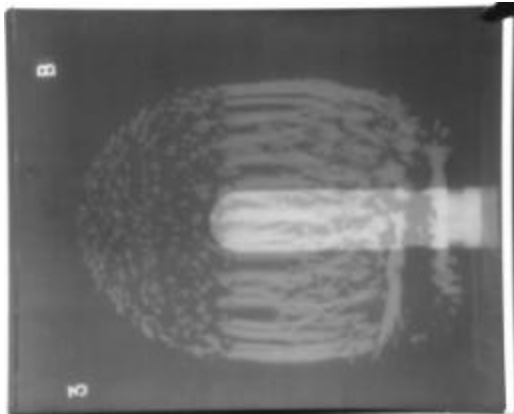
40mm Type 1
Non Optimised



40mm Type 2
Optimised A/Pers



40mm Type 3
Optimised A/Pers+Material



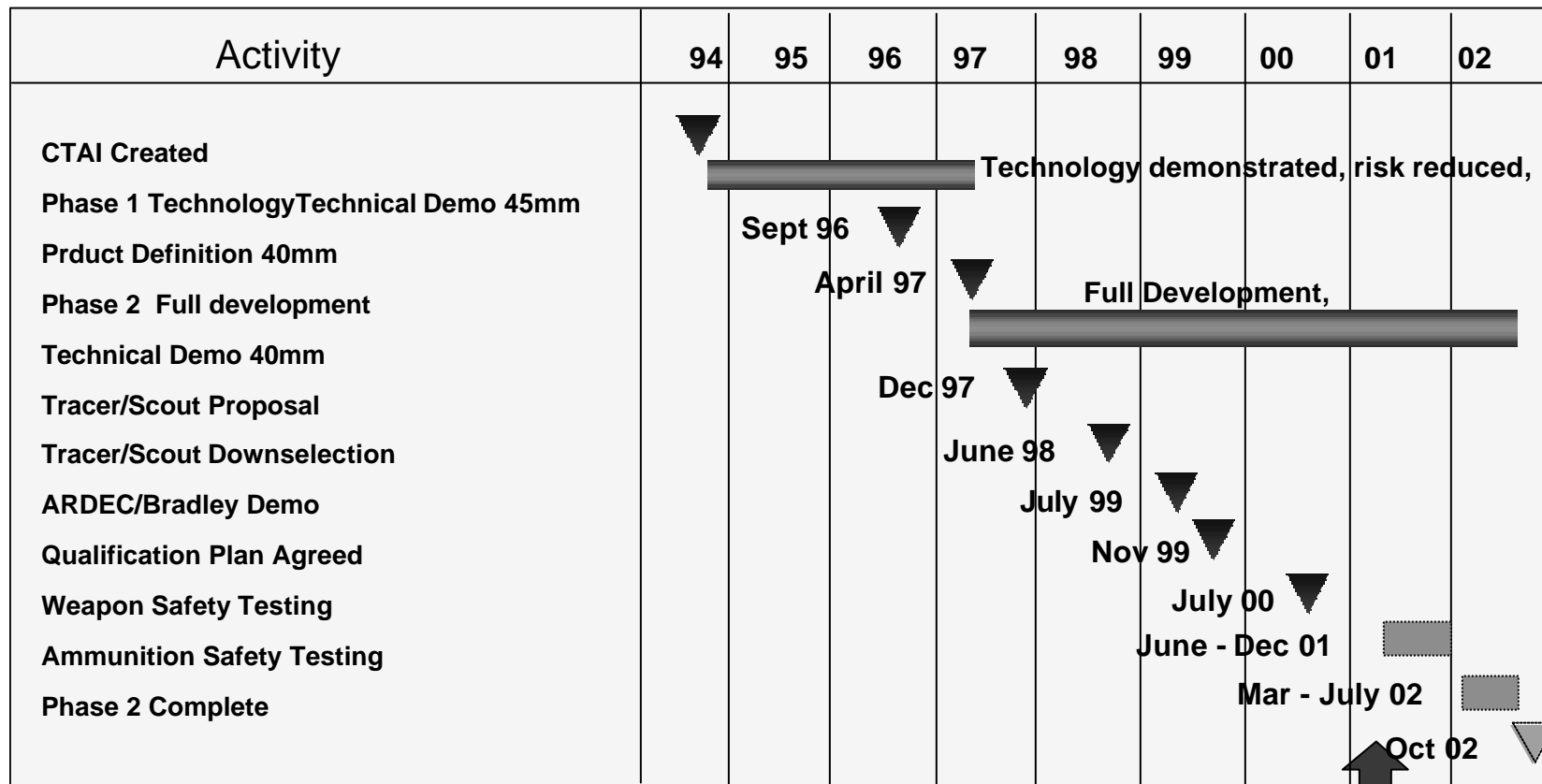
CTA INTERNATIONAL

Air Burst Fragmentation Trials



CTWS - Program Status

- Total Investment \$41M
- Spend to completion \$9M



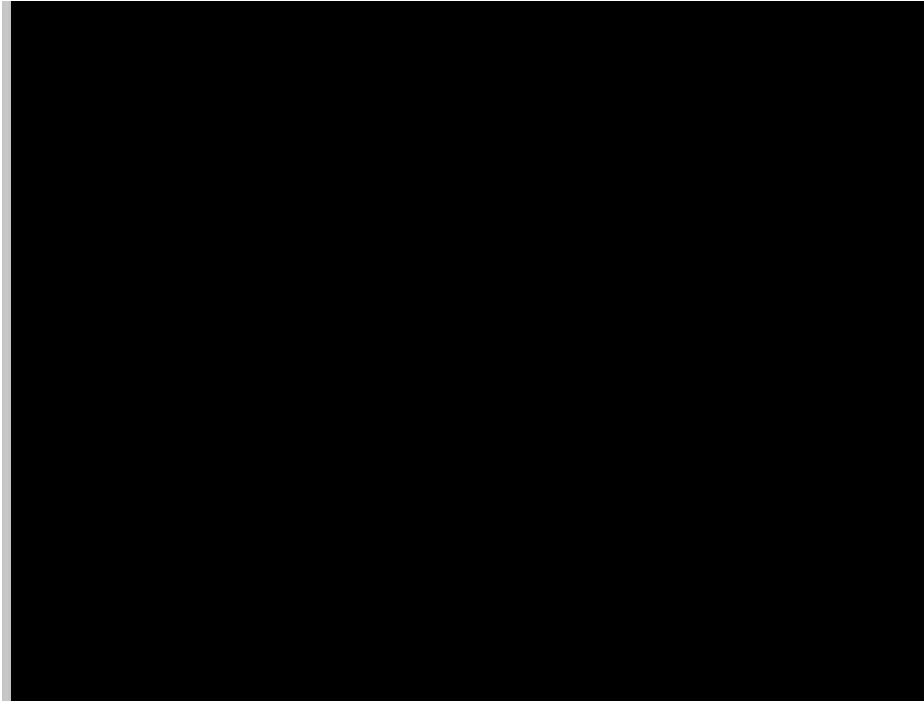
Time now

CTA INTERNATIONAL

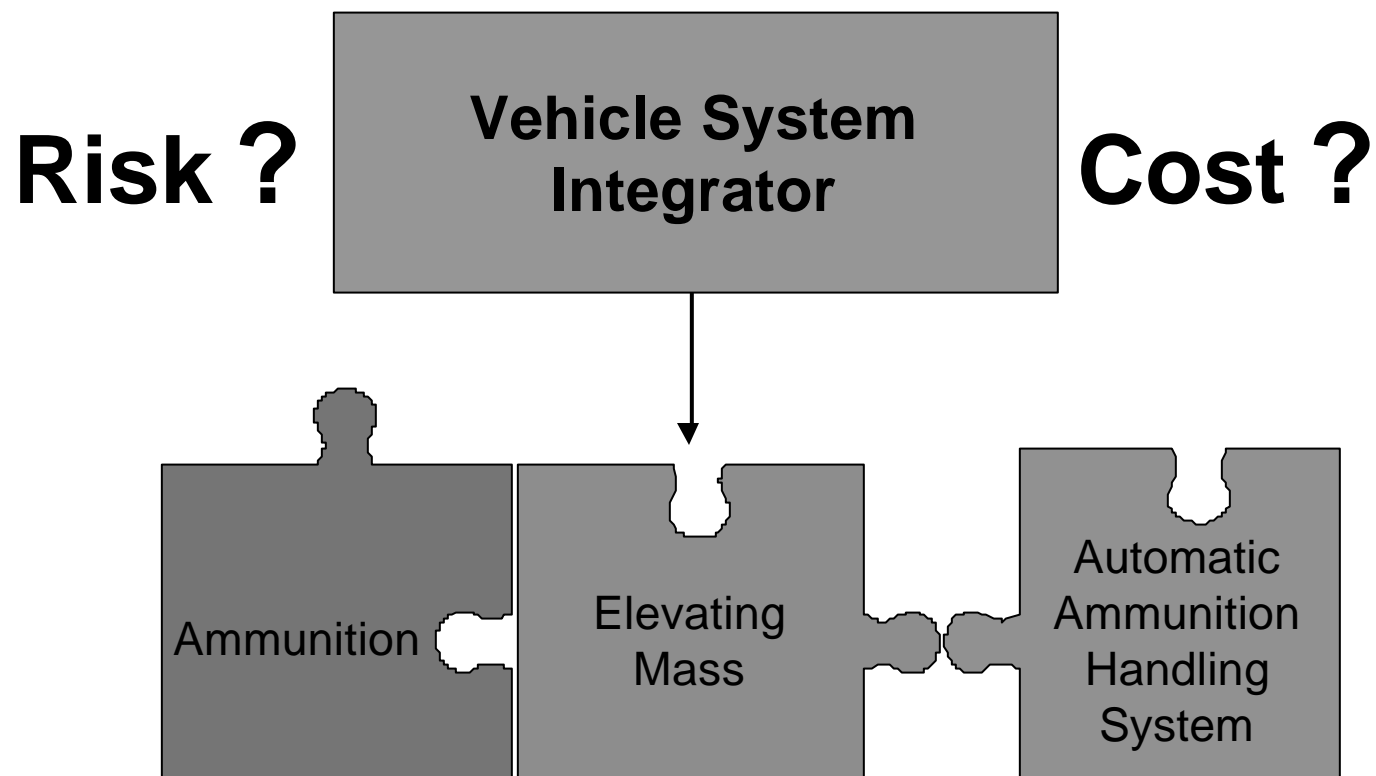
Integration Benefits



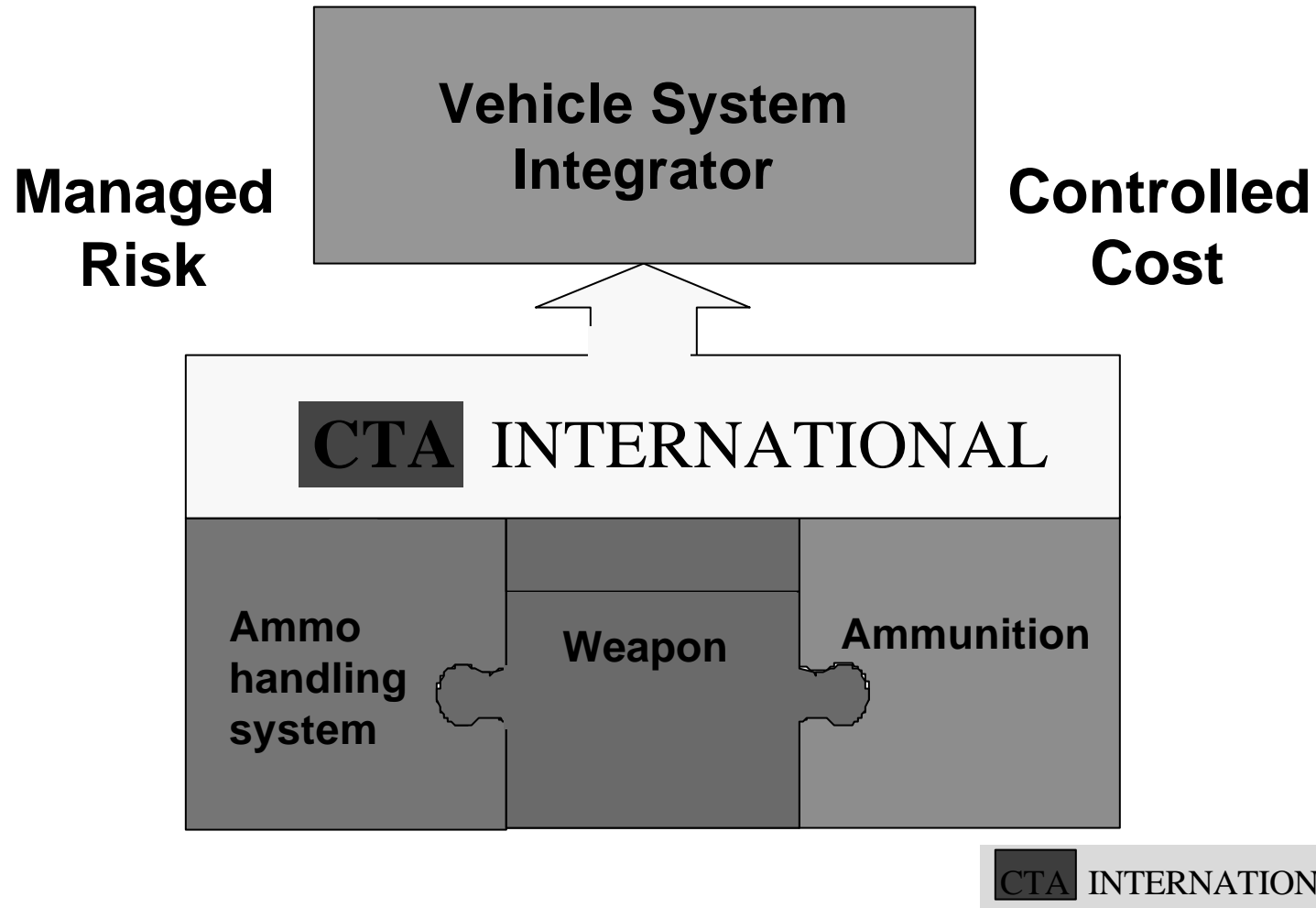
- Proven technology
- Low risk
- High reliability
- Ease of integration



Traditional System Approach



CTAI Systems Approach



Bradley Integration



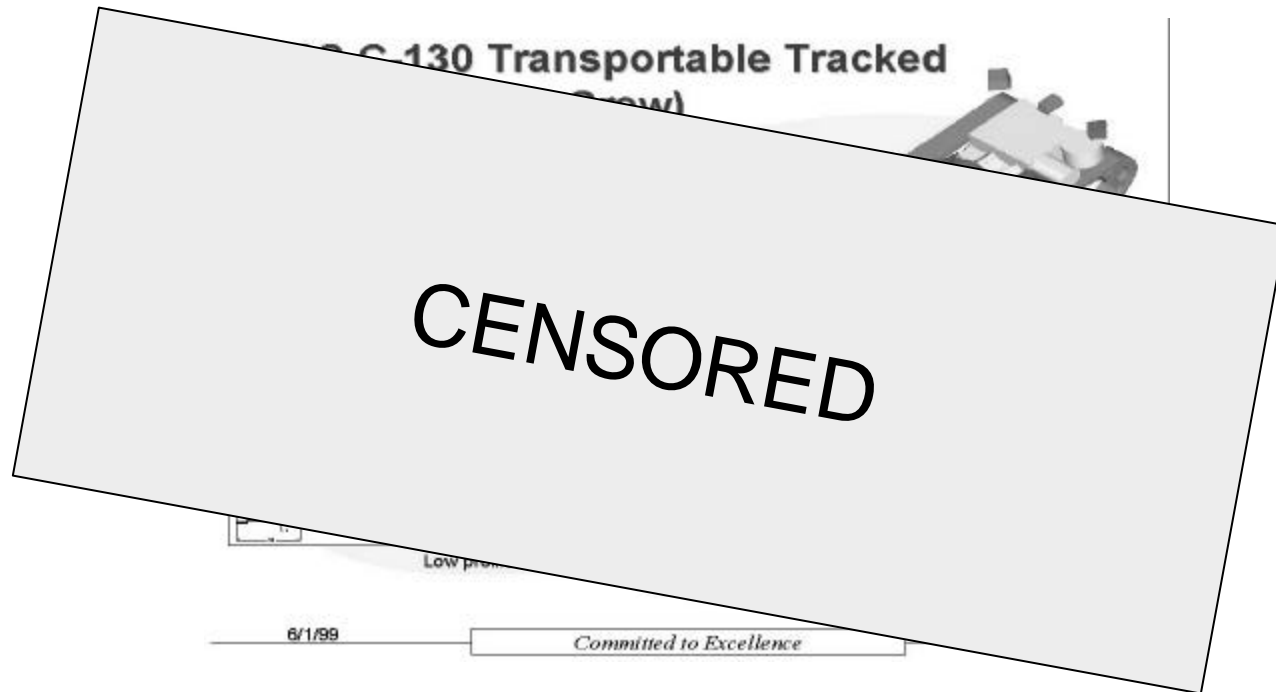
CTA INTERNATIONAL

Bradley Integration



CTA INTERNATIONAL

Launch Customer Programme TRACER/SCOUT



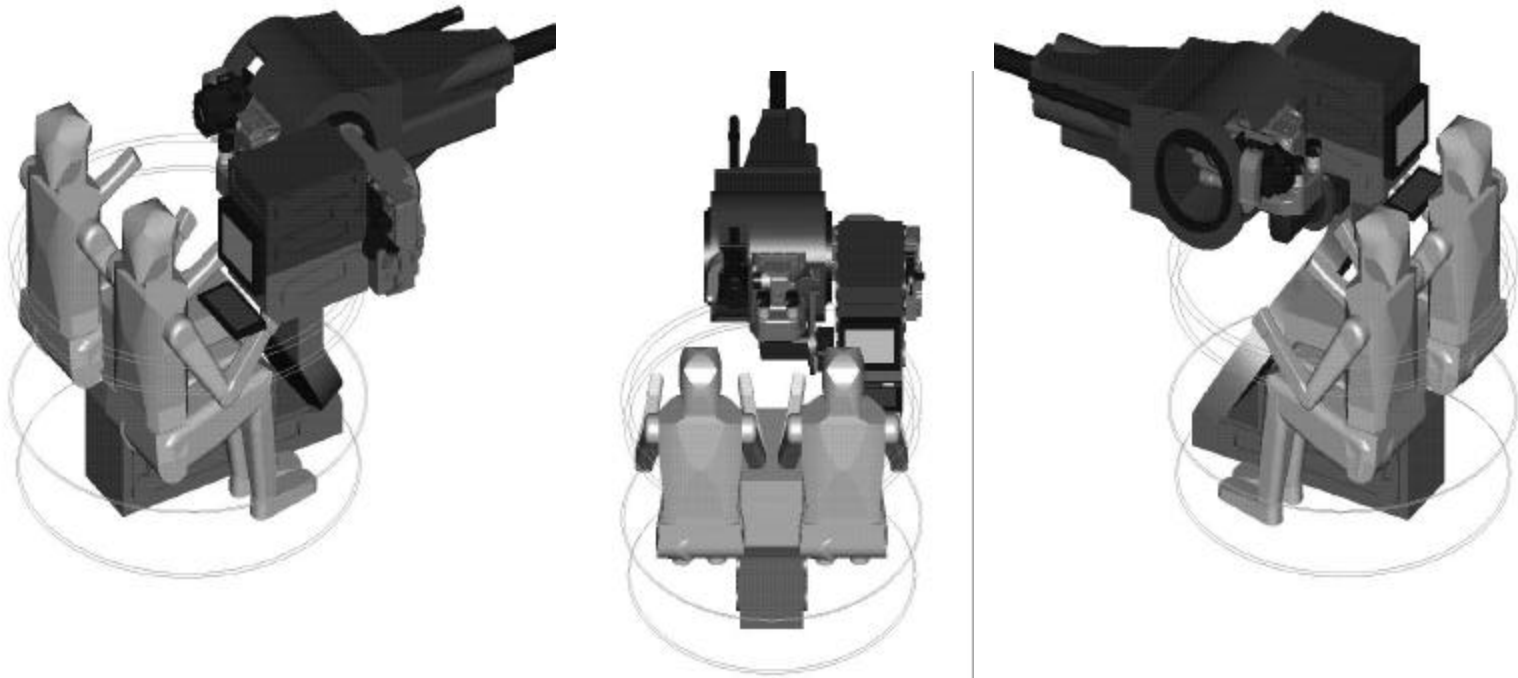
- **Selected for both Lancer/SIKA**
- **Contract Commitments in place**
- **First system deliveries May 2001**

Warrior Integration Concept

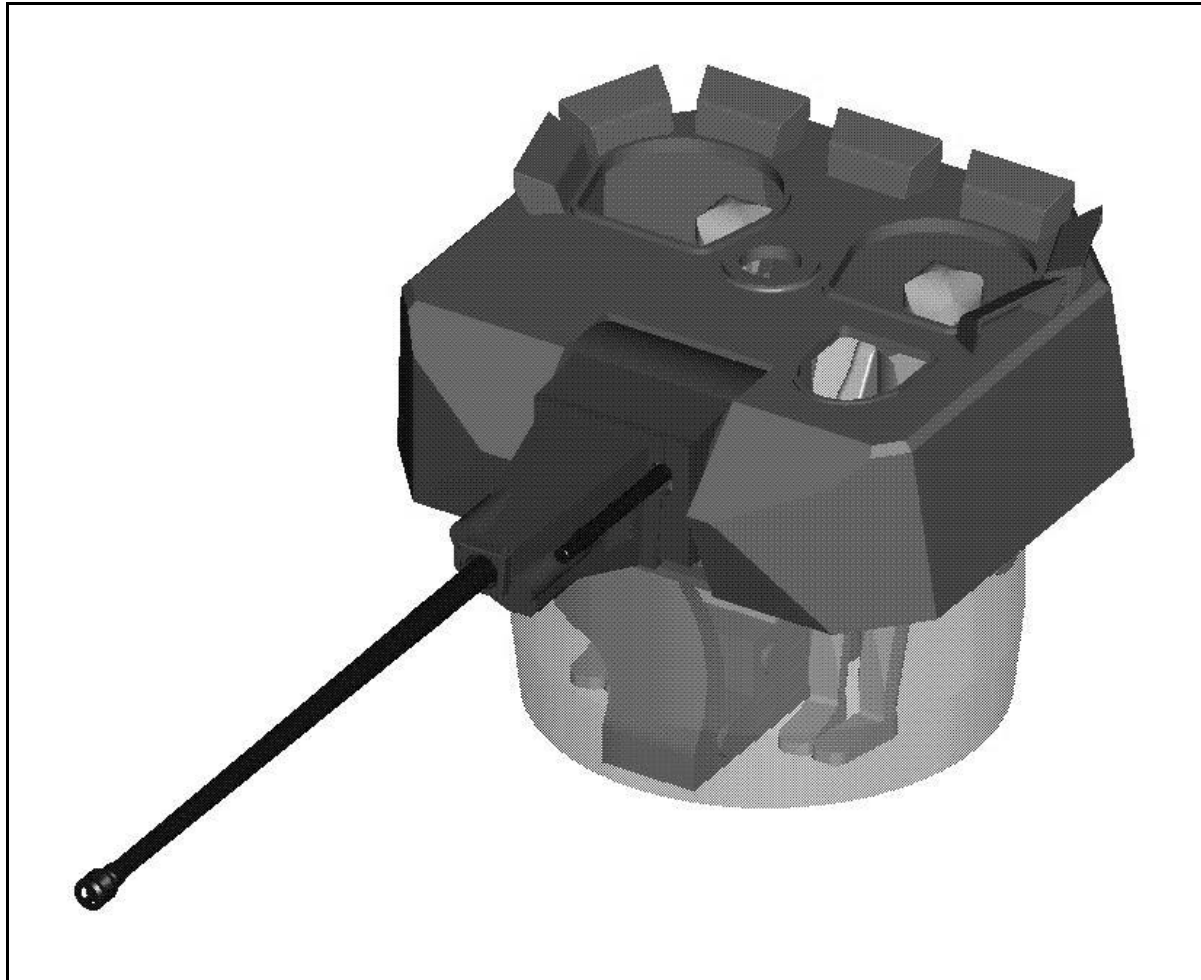


CTA INTERNATIONAL

Warrior Integration Concept



Warrior Integration Concept



CTA INTERNATIONAL

New Platforms and Upgrades

France/UK



**TRACER/FRES
2007**



**Warrior
2007**



**EBRC
2012**

• Total 1489 Systems

USA



**Scout
2007**



**BCT Upgrade
2005**



**FCS
2008+**

Bradley ?



• + 3000 Systems

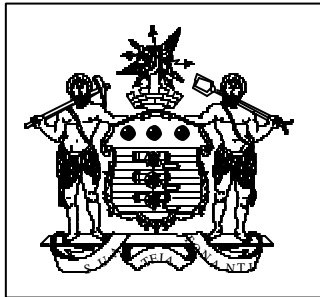
CTA INTERNATIONAL

Priorities CTAI

- Establish Availability of CTWS before 2003
- Ready to support platform development

Safety Testing of System; UK/US/Fr agreed Standards

UK MoD
Ordnance
Board



US DoD
DTC, ATC

Signed July 2000

Major General Curran (UK) Brig General Ertwine (US)

CTA INTERNATIONAL



Weapon Maturity

Simulated Endurance and Fatigue Testing

Powered Cycles



Impulse Testing

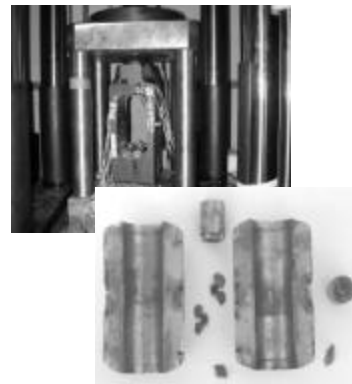


Dynamic Fatigue Testing; Breech Ring, Chamber, Recoil system

Cycling Press

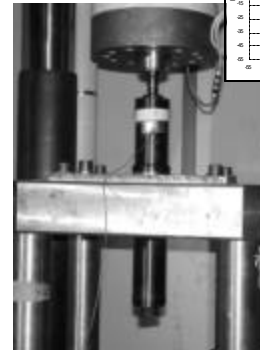
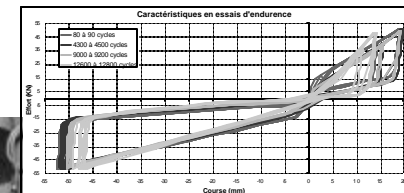
Test Piece

Instrumentation



Provoke Fatigue Failure
Through Simulation of
Firing pressure Cycle
At - 7500 Cycles

Recoil Unit



CTA INTERNATIONAL

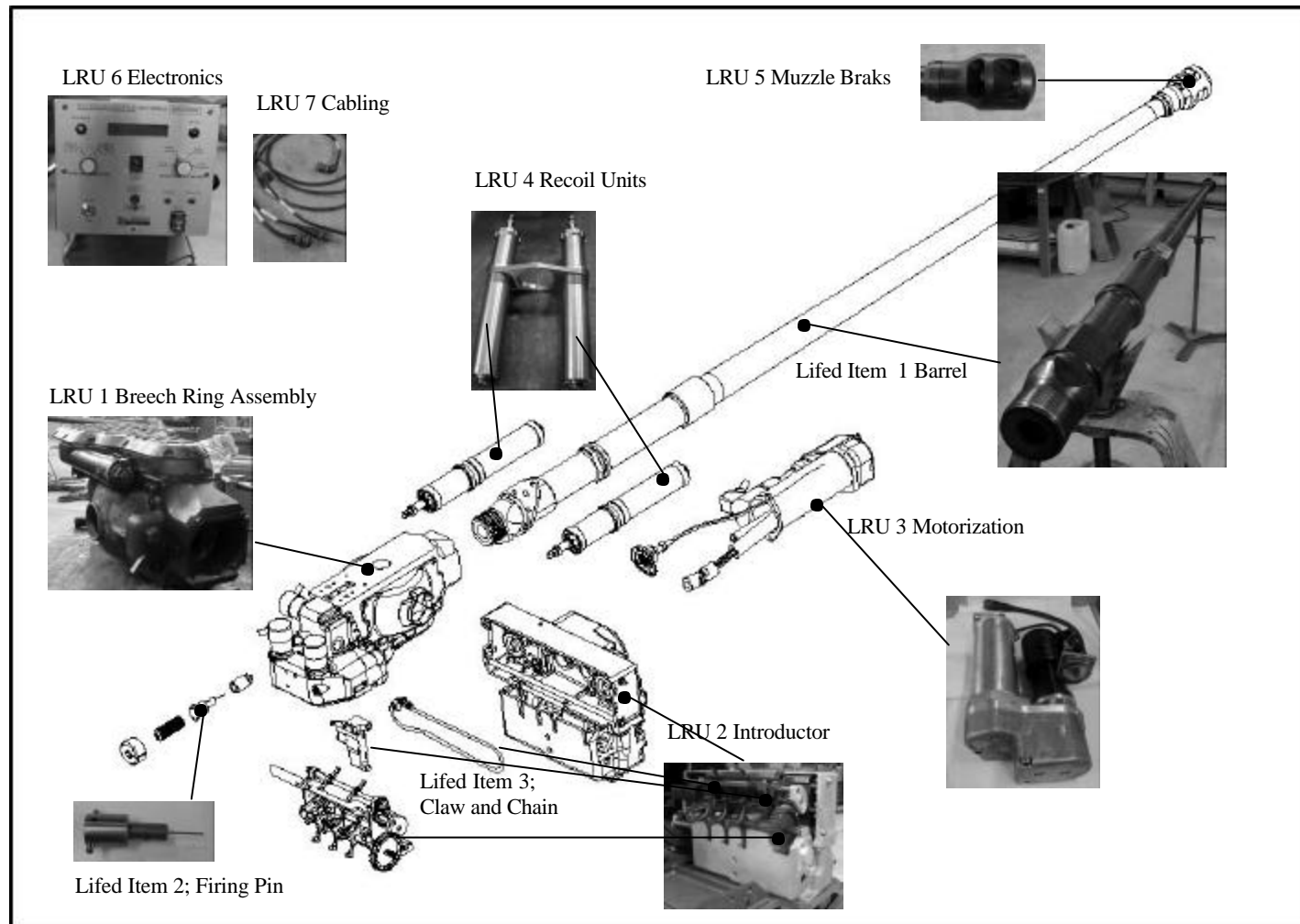
System Maturity



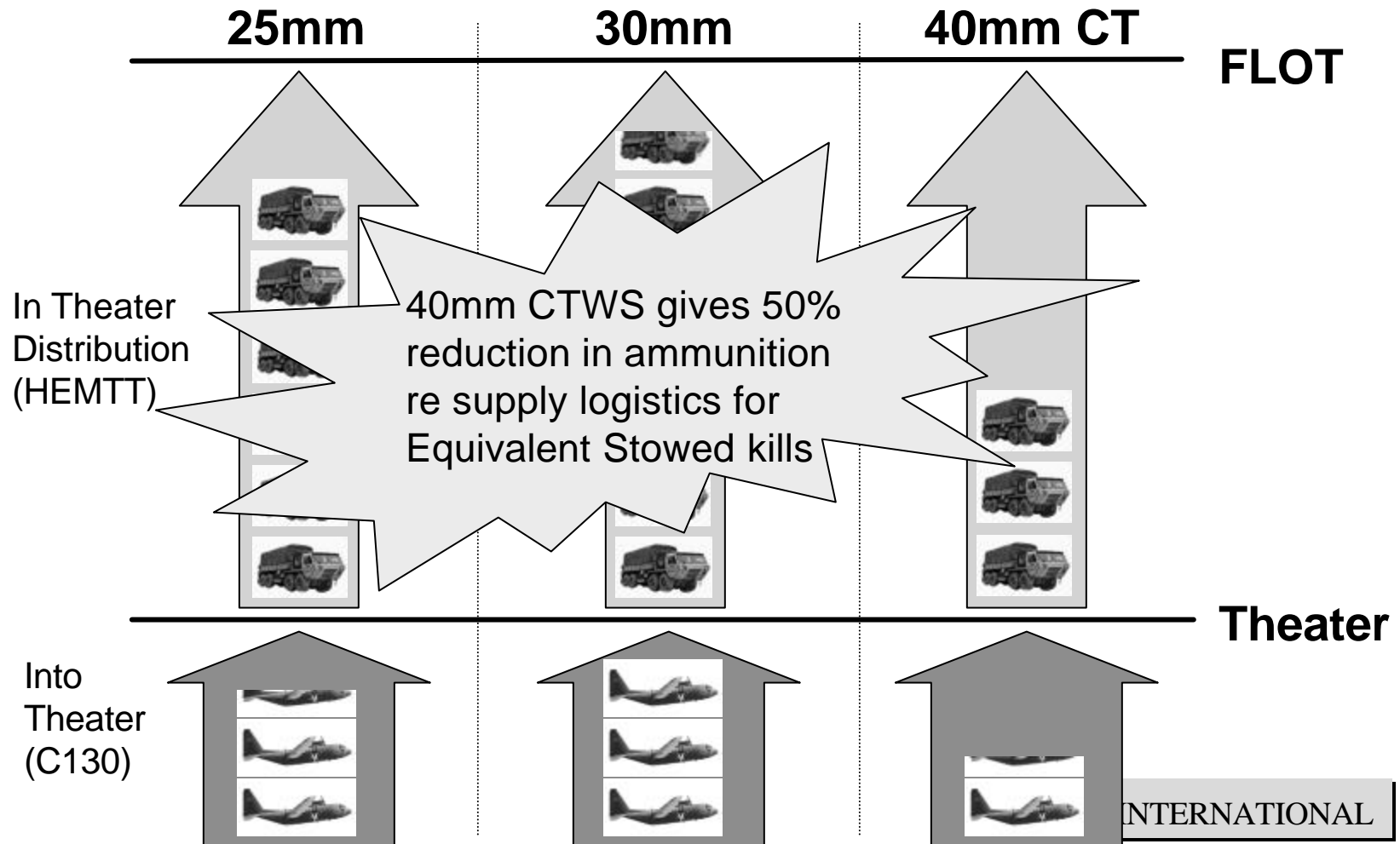
CTWS is Revolution in Military Logistics

- Reduced Logistics Footprint
- Facilitisation geared for customer needs
- Demil process designed in
- Reduced Training Needs
- Reduced Wastage in Service
- Gun, Ammunition and AHS optimised as a System

Weapon LRU's and Lifed Items

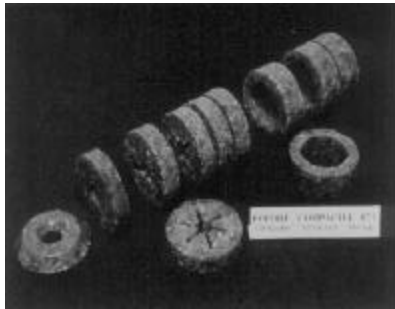


Ammunition Logistics

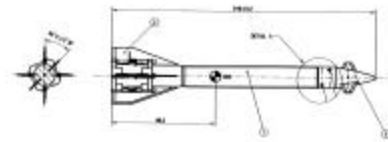
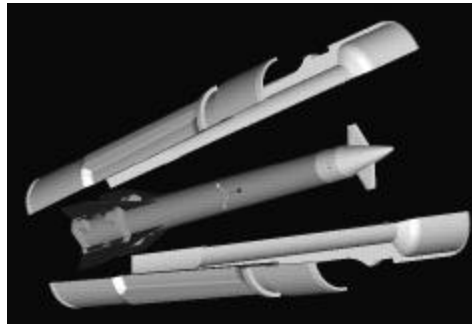


Future Developments CTAI

UK, France, US Research Development Funding based on 40mm CTWS and CTA Technology Generically.



Ammunition Technologies
Compressed Charge
Sabot Materials
Rod Materials



Guided Dart CTGP
SMS, DERA,
SPART, DARPA



105mm Studies
SPART
ARDEC

**Facilitate Ongoing International Cooperation
in CT Technology**

CTA INTERNATIONAL

Conclusions

- CTAI poised to support weapon requirements in New and Legacy Light Armored Vehicle Platforms
- Bold Industrial Investment key to success
- CTAI's demonstrated successes and innovative approaches to both technology and business have established CTAI as a 'brand label' in US and Europe.
- International Partnering Works!

End of Presentation